Heating Piping & Air Conditioning

1962 VOLUME INDEX
January-December
Vol. 34, Nos. 1-12

This index includes the feature editorial material, Open for Discussion, Question of the Month, and You'll Want To Know departments appearing regularly in each issue. The You'll Want To Know pages include items of news, comments on current events, etc. A complete directory section covering heating, piping, and air conditioning equipment for industry and large buildings was published in the January issue.

The articles are indexed by type of construction, system, or function. For example, the article "Central Cooling Updates Existing Apartment Building" is indexed under the key words "Apartment" and "Cooling."

The month and page number that appear in italics *in the index refer to comments on the indexed article. These comments appeared in the "Open for Discussion" pages.*

Published monthly by the Keeney Publishing Co., subsidiary of Reinhold Publishing Corp., 6 N. Michigan Ave., Chicago 2, Ill.

A.

AEC's Ames Lab, Metals Development Process Integrated with Air Conditioning at, by Robert W. Flanagan ....July 97

ARF Seeks Answers to Heat Check Program .....May 41

ARI Adds Training Director to Educate Service Personnel .....May 42

ARI Establishes Non-Residential Warm Air Heater Product Section .....January 43

ARI Reports $836,210,000 Spent on Large Central Air Conditioning in 1961 .....July 40

ARI Reports Unitary Shipments up 17 Percent in 1962 First Quarter .....September 54

ARI Sees 1961 as Banner Year for Large Central Air Conditioning .....February 158

ARI Training Program, High Schools Adopt ....December 42

ASHRAE Life Members Honor John A. Goff .....April 45

Absorption Units For Low Operating Costs, How To Combine Centrifugal and, by F. F. Stevenson .....December 123

Acoustical Engineers Form National Council .....November 40

Addresses for Engineering Societies, Associations, Directory of .....May 141

Aeberly, John J. — In Memorian .....July 41; August 41

Airborne Dust? Can Statically Charged Screens Control .....September 166

Air Bypass Method of Temperature Control of Preheat Coils Described, (Open for Discussion), by F. F. Stevenson .....March 97

Air Cleaning Devices, Know Rating Methods When Selecting .....January 181; *March* 106

Air Condition 30-Year-Old Building, Self-Contained Units Chosen to, by Lewis Smith .....April 128; *July* 91

Air Condition 35-Year Old Building, Combine Old and New Systems to, by Leonard Weger and Gordon Desmond .....February 84

Air Conditioned, Why and How a New High School Is Being Fully, by Lewis Smith .....December 93

Air Conditioner Developed for Navy, Thermoelectric ..June 43

Air Conditioner Shipments Up 25 percent in First Half of 1962, Unitary .....November 42

Air Conditioners in Building's Perimeter, Install Packaged .....May 225

Air Conditioners, International Meeting Held to Standardize Rating of Room .....April 229

Air Conditioners 9 Percent Over 1960, 1961 Shipments of Unitary .....May 216

Air Conditioning at AEC's Ames Lab, Metals Development Process Integrated With, by Robert W. Flanagan .....July 97

Air Conditioning, Commerce Dept. Issues Breakdown of Future Government ....April 228

Air Conditioning, Compares Experience with Radome, (Open for Discussion), by P. A. Green .....August 73

Air Conditioning Compressor, Natural Gas Engine Drives Building's .....May 113

Air Conditioning Contractors, Public Demands Air Pollution Control City Official Tells .....May 41

Air Conditioning Design Shows Comparative First Cost of Three Systems, Motel, by Farouk Huneidi .....May 118; *Sept.* 105, *106*

Air Conditioning Designers to Answer Laymen-Critics?, Will Articles Inspire, (Open for Discussion), by William O. Huebner .....January 143

Air Conditioning, Diverse Lab Facilities Require Flexibility in, by T. G. Swearingen .....July 132; *Dec.* 84

Air Conditioning? Do Cows Need .....June 41

Air Conditioning Earns money for Office Building Owners, Operating Cost Figures Show .....September 50

Air Conditioning — Gas or Electricity? Energy for, by F. F. Stevenson .....June 109

Air Conditioning, Gas for — How to Estimate Operating Costs, by F. F. Stevenson .....July 135; *Sept.* 108

Air Conditioning and Heating Institute to be Held at University of Wisconsin ..November 41

Air Conditioning and Heating in Italy, by T. H. Urdahl .....October 112

Air Conditioning — How to Estimate Operating Costs, Electricity for, by F. F. Stevenson .....August 131; *Nov.* 90

Air Conditioning? How Much Does It Cost To Put Quality and Year 'Round Service Into School, by Maurice J. Wilson .....January 202

Air Conditioning, Installation Points Up Advantages of Integrated Lighting, by Lester S. Ries .....September 140

Air Conditioning for Library of Congress, Engineering Study Shows How to Provide, by Jack W. Barrett .....October 98

Air Conditioning Maintains, Tem-

perature, Humidity Levels in Library, Year 'Round ..... May 105; *June 96; July* 92
Air Conditioning Matches Solar Heat Gains in Seattle's Space Needle, by R. R. Kirkwood and R. C. Lux ..... April 107; *Nov.* 84
Air Conditioning, Money Is Seldom Available for Dormitory, by Samuel R. Lewis ..... November 154
Air Conditioning Needs of Computers Pose Problem for New Office Building, by J. Marx Ayres .... August 107; *Nov.* 90
Air Conditioning, An Oasis — Through, by Kenneth W. Huffman ..... September 159
Air Conditioning Operating Costs? More Capacity Ranges Needed for, (Open for Discussion), by A. B. Newton .... September 108
Air Conditioning, Problems of Thin Shell Design Solved in Planetarium, by Harold P. Brehm ..... December 107
Air Conditioning System, Comments on Plant's Modified, (Open for Discussion), by L. F. Coombs ..... May 88
Air Conditioning System, Raised Aluminum Floor Creates Plenum Space for Data Center's ..... February 42
Air Conditioning Systems, An Engineering Study of Integrated Lighting and, by Samuel Sachs ..... March 121; *June 85, 88; Oct.* 80
Air Conditioning Trouble, Component Monitoring Anticipates, by Hugo R. Lopez ..... January 178; *March* 106
Air-Cooled Condensing Units, How To Estimate Performance of, by L. S. Bowers ..... July 125
Air Distribution, What You Should Know About Room, by H. E. Straub ..... January 209
Air Filter Efficiency, Why Test Method is Important in Rating ..... July 42
Air Filter Institute Test Code Should Have Had More Emphasis, Feels, (Open for Discussion), by R. F. Logsdon ..... March 106
Air Flow Field Tests, What to Expect from, by J. A. Bishop ..... July 110; August 119; *Aug. 76; Dec. 81,* 82
Air Mixing Stations, How to Apply Large, by E. Gordon Stocks, Jr., ... May 128
Air Mixing Stations, How to Install and Control Large, by E. Gordon Stocks, Jr., ... June 137
Air Pollution Control City Official Tells Air Conditioning Contractors, Public Demands ..... May 41
Air Pollution Control an Expanding Field for Next Decade ..... January 45
Air Pollution, Copters Take Air Samples in City's Fight Against ..... March 251
Air Pollution a Growing Problem ..... October 188
Air Pollution, M.I.T. To Hold Summer Course on the Meteorological Aspects of ... June 41
Air Pollution, National Conference Scheduled on ... August 41
Airport Design Calls for Multiplicity of Systems, New Concept in, by Ray B. Luhnow ..... December 102
Air Supply, Exhaust Via Concrete Columns Serve Electronics Plant, How ... November 151
Airtight Enclosures, Chart Determines Rate of CO_2 Buildup in, by John D. Constance ..... August 141
American Consultants, Promote Foreign Use of ..... October 186
American Hospital Association To Hold 64th Annual Meeting in Chicago ..... August 41
Amortization Periods for HPAC Equipment? What Are Reasonable — (Question of the Month) ..... March 110
Animal Housing, Symposium To Cover Research ... November 216
Anti-Air Pollution Units, Auto Industry To Add .... January 43
Apartment Building, Central Cooling Updates Existing, by W. Hugh Bache ..... March 138
Apartment-Shopping Center Complex, Natural Gas Is Sole Energy Source for ..... May 133; *July* 94
Apprentices Goal of California Joint Industry Group, More ..... March 250
Approval Drawings, A Consulting Engineer's Views on, by John W. Scharres ..... May 112
Austenitic Stainless Steel Piping for 2400 psi, 1100 F Steam in Generating Station, Use, by R. A. Baker ..... October 93
Auto Industry To Add Anti-Air Pollution Units ..... January 43

B

BRI Now Independent Technical Society ..... September 54
Bahnfleth, Donald B., Named Editor of HPAC ... February 39
Bank's Four Year Expansion Program, Heating-Cooling "Growth" Matches, by Samuel Sachs ..... January 174
Bank's Sidewalks Clear, Snow Melting System Keeps, by L. A. Stevens and G. D. Winans ..... April 114
Bellows Expansion Joints? Here Are Important Points to Remember, Installing, by Martin J. Hannah ..... January 186
Bid Plan, Contractors, Architects, Engineers, and Building Owners Approve New Chicago. .... January 44
Bituminous Coal Quickly Determined by Nomograph, Heating Value of, by David P. Costa ..... October 141
Blast Coil, Chart Permits Quick Calculation of Temperature of Air From, by David P. Costa ..... July 123
Boiler Cleaning Serves as Check on Water Treatment, by John M. Hartman ..... August 136
Boiler Decreases Pressure Drop, Eliminates Priming Reduced Firing Rate of, by John M. Hartman ..... December 106
Boiler Explosion Cases, Burden of Proof May Be on Defendant In, by R. A. Brown ..... September 145
Boiler Flooding, Properly Located Vacuum Breaker Stops, by John M. Hartman .... July 119
Boiler Insurance Policy, Know the Exact Coverage of Your, by R. A. Brown .. November 123
Boiler Must Have Clean Water, A, by John M. Hartman .. June 115
Boiler Operation, Laboratory Investigation Points Up Cause of Noisy, by John M. Hartman ..... May 111
Boiler Plant, French Housing Project Has Mammoth Central ..... December 40
Boiler Room, Case of the Steamy; Case of the High Pressure Tank, by C. T. Baker ..... September 165
Boilers, Pointers on the Care of Low Pressure Steam Steel, by W. A. Keilbaugh and F. J. Pocock ... February 80; April 122
Bosch, Lester L., CEC Elects President ..... June 40
Building Research, Science Group Study Recommends Federal Coordinated ..... September 47
Building Space Heating Requirements, How to Estimate Net, by R. A. Parsons .... January 155
Butterfly Valves for Control, Other Applications, Selection and Use of, by Charles Gregg ..... March 143
Buzzell, Donald A., Named CEC Executive Director .... January 44

C

CEC Appoints Law Firm ..... November 218
CEC Discusses More Than 60 Subjects at New Orleans Annual Board of Directors Meeting ..... July 39
CEC Elects Bosch President .. June 40

CEC Executive Director, Donald A. Buzzell Named . . . January 44
CEC Says "No" to Compulsory Liability Insurance . . October 39
CEC Teams Up with AIA In NSPE Joint Committee . . . . . September 52
CSI Meeting to Discuss Construction Contracts, Specifications . . . . . October 43
Candy Warehouse, Insulation Reduces Cooling Load at . . April 46
Ceiling and Raised Floor Used as Supply and Return Plenums?, Suspended, (Open for Discussion), by F. J. Grande . . . . . March 98
Central Air Conditioning, ARI Sees 1961 as Banner Year for Large . . . . . February 158
Central Air Conditioning in 1961, ARI Reports $836,210,000 Spent on . . . . . July 40
Centrifugal and Absorption Units For Low Operating Costs, How To Combine, by F. F. Stevenson . . . . . December 123
Centrifugal Chillers, How To Estimate Operating Costs of Steam Turbine Drive, by F. F. Stevenson . . . . . September 161
Centrifugal Compressors, Natural Gas Engine Drive For, by John C. Conrad . . . . . December 111
Centrifugal Pumps in Process Piping Systems, Liquid Recirculation Around, by J. A. Hunter, Jr. . . . . July 141
Chart Gives Required Pipe Sizes For Specified Gas Flow, by David P. Costa . . . . . January 207
Chemical Plant, Grooved Pipe and Fittings Process System Saves Time, Dollars for, by Harold Reed . . . . . January 160
Chemistry and Equipment Maintenance — HPAC Engineering Data File, by Charles M. Loucks . . . . . November 157
Chicago Code Group Elects Engineer President . . . . . March 252
Chiller-Heater, Asks for Clarification on Use of, (Open for Discussion), by Hem C. Gupta . . . . . September 106
Church Modernizes Heating System . . . . . September 56
Circulating Water Piping Systems, Closed — Operating Problems that Arise and How to Combat Them, by Sidney Sussman and Henry L. Shuldener, Jr. . . . . July 115
Coal Heats, Cools New Building . . . . . March 46
Coal for Specific Applications, Scientists Prepare . . . . . June 40
Coal: What Every Engineer Should Know, by Willie Hammer . . . . . January 201
Coil Freeze-ups, Avoid These Mistakes to Prevent Hot Water, by Samuel R. Lewis . . March 142
Combustion Air Requirements, Chart Rapidly Determines Theoretical, by Denis Csathy . . . . . December 141
Combustion, Cornell University to Host 9th International Symposium on . . . . . May 40
Compressor Explosion Not Covered by "All-Inclusive" Machinery Policy, by R. A. Brown . . . . . December 130
Compressor, The Growling and the Case of the Falling Tower, by C. T. Baker . . . . . May 140
Compressor Motor Experiments Suggest Preventive Maintenance Measures, Hermetic, by C. A. Geist . . . . . June 128
Computer Cooling Occasioned by Transistors, Note Changes in, (Open for Discussion) by Ivan F. Norcross . . . . January 144
Computer Room, Feels Supply, Return Air Temperature Difference Is Small in, (Open for Discussion), by F. J. Gande . . . . . November 90
Computers Are Answer to Complexity of Piping Cost Estimates, by Winston M. Dudley and Maurice Dornberg . . . . . October 107
Computers Pose Problem for New Office Building, Air Conditioning Needs of, by J. Marx Ayres . . . . August 107; *Nov.* 90
Condensation — New Method Tells How To Determine Insulation Thickness, Preventing Surface . . . . . August 137
Condenser Heat Transfer, Nomograph Simplifies Calculation of Surface, by S. J. Salva and L. Rushing . . . . February 105
Condensers, Nomograph Simplifies Calculation of Overall Coefficient of Heat Transfer of Surface, by S. J. Salva and L. Rushing . . . . . March 151
Condensing Units, How To Estimate Performance of Air-Cooled, by L. S. Bowers . . . . . July 125
Construction Contracts Continue Rapid Growth . . . September 48
Construction Contracts Set New Record in 1961 . . . . . March 249
Construction Contracts Top 1961 Figure; Year Totals Ahead Too, September . . . December 39
Construction to Exceed Forecasts, 1962 . . . . . May 62
Construction, Forecast for 1963: Another Record Year . . . . . November 39
Construction Tops Year Ago Figures, July . . . . . October 41
Contamination Control Group to Hold First Annual Convention . . . . . May 42
Control Adjustments Required When System Was Placed in Service? Were, (Open for Discussion), by Roger W. Haines . . . . . November 84
Control of Diverse Loads Provided by Dual Duct System, Flexible . . . . . March 133
Control Is Effective — But Is Added Cost Justified? (Open for Discussion), by N. J. Janisse . . . . . May 88
Control Matches Discharge Temperatures, Multi-Unit, by C. J. Busch . . . . . April 140; *May* 88; *July* 92
Control Provided for Harvard's Steam Supply System, Central . . . . . June 124; *July* 92
Control System Need Not Be Expensive, Refined Multi-Unit, (Open for Discussion), by C. J. Busch . . . . . July 92
Controls in Tunnels Should Favor Reliable Performance, Location of, (Open for Discussion), by Lester Ries . . . . July 92
Cooling Coils in Same Air Stream, All-Gas Central System Has Burners . . . . . September 146; *Oct.* 79
Cooling, Filtering Capacity, Production Expansion Requires Additional . . March 45; *May* 88
Cooling "Growth" Matches Bank's Four Year Expansion Program, Heating, by Samuel Sachs . . . . . January 174
Cooling, Heating Utility Begins Operation, First . . . . . August 39
Cooling Load Design Conditions for 250 Foreign Cities, Lists . . . . . March 50
Cooling Loads, Studies Show How to Orient Building To Reduce Heating, (Open for Discussion), by Lester S. Ries . . . . . December 84
Cooling Systems Protect Giant Satellite Tracking Antenna, Heating, by Roy E. Elicker . . . . . June 99; *Aug.* 73
Cooling Tower Noise Evaluation, A Practical Approach to, by Laymon Miller and Frederick M. Long . . . . . June 141
Cooling Tower Power Usages? Why Not Use Actual Bhp for, (Open for Discussion), by H. George Gregerson . . . . . November 90
Cooling Updates Existing Apartment Building, Central, by W. Hugh Bache . . . . . March 138
Copper Duct at YMCA, Use . . . . . April 50
Copters Take Air Samples in City's Fight Against Air Pollution . . . . . March 251
Cornell University to Host 9th International Symposium on Combustion . . . . . May 40
Corrosion Control, Sees Danger in Generalizations on Galvanized Pipe, (Open for Discussion), by T. E. Larson . . June 90
Corrosion of Galvanized Steel

Pipe, How to Prevent, by J. K. Rice ..May 114; *June 90, 94*
Corrosion, How to Apply Epoxy Resins to Control Pipe, by R. H. Bacon .....May 124
Corrosion Resistance to Brine, Chlorine, Polyester Piping Chosen for, by R. E. Baker .....November 130
Corrosion in Steam Piping During Shutdown, How to Prevent, by Marcel Stein ..March 136
Corrosion in Steam Piping Under Changing Load Conditions, How to Prevent, by Marcel Stein .....February 90
Cost Estimate Work Through System Standardization, Ease Piping, by Arthur H. Weber .....November 119
Cost Estimates, Computers Are Answer to Complexity of Piping, by Winston M. Dudley and Maurice Dornberg .....October 107
Cost Figures for Indiana State Office Building, Here Are, (Open for Discussion), by J. F. Sasser .....June 85
Cost Studies, System Analyses Show How to Modernize Heating, Add Cooling to R & D Labs, by J. A. Fife .....September 121
Cost of Three Systems, Motel Air Conditioning Design Shows Comparative First, by Farouk Huneidi .....May 148; *Sept. 105, 106*
Costs Of Instrument Installations, How To Estimate, by Louis L. Perry .....December 98
Costs in Plant Heating, Process Systems, Low Pressure Steam Reduces, by William R. Farrington .....August 125
CO_2 Buildup in Airtight Enclosures, Chart Determines Rate Of, by John D. Constance.....August 141
Course on Science, Engineering Information Theory, Offers .....February 40
Cows Need Air Conditioning? Do .....June 41
Cutler, George C., Named Keeney Sales Manager .....September 48

D

Data Reduction Center's Air Conditioning System, Raised Aluminum Floor Creates Plenum Space for ....February 42
Defrosting, Eliminating Unnecessary Heat Pump, by Lester T. Avery .....April 133
Design Aspects of Integrated System, Queries Equipment Availability, (Open for Discussion), by David M. Solzman .....August 81
Design Aspects of Integrated System, Queries Equipment Availability, (Open for Discussion), by Warren Viessman .....August 76
Design Conditions Must be Reconsidered, Summer, (Open for Discussion), by Lester T. Avery .....July 92
Design Conditions for 250 Foreign Cities, Lists Cooling Load .....March 50
Design Requirements for Mechanical Systems in Protective Shelters, by Paul R. Achenbach ....February 73; *May 84*
Designers to Answer Laymen-Critics?, Will Articles Inspire Air Conditioning, (Open for Discussion), by William O. Huebner .....January 143
Direct-Fired Makeup Air Heaters, Recirculated Air with, (Open for Discussion), by George M. Hama ...October 79
Direct-Fired, Unvented Makeup Air Heaters Perform, How .....July 113
Directory of Addresses for Engineering Societies, Associations .....May 141
Drawings, A Consulting Engineer's Views on Approval, by John W. Scharres .....May 112
Dormitory Air Conditioning, Money Is Seldom Available for, by Samuel R. Lewis .....November 154
Dual Duct High Velocity Systems Provide Control for Heavy Loads, by J. F. Sasser and John Maras ....May 95; *June 85*
Dual Duct System, Flexible Control of Diverse Loads Provided by .....March 133
Dual Duct System, New Office Building Served by High Velocity, by I. A. Naman ..July 120
Dual Duct Systems, Honolulu Building Has Islands' First High Pressure .....March 149
Dual Duct Systems — Some Design Considerations, by John W. Markert .....February 97

E

EJC Cites Need for Engineers .....September 48
Economic Outlook: Optimism with Caution, 1962 ..January 41
Efficiencies Adds Confusion to Heat Cost Analysis, Use of Several Types of, (Open for Discussion), by Harry T. Yopp .....April 94
Efficiency Data, Engineers' Heating Experience Provides Useful, (Open for Discussion), by Pat Dwyer .....April 98
Efficiency, Feels Too Much Emphasis Placed on Fan Static, (Open for Discussion), by C. J. Trickler .....April 98
Electric Comfort Heating Symposium, Many Topics To Be Discussed at .....March 46
Electric Heaters, Nomograph Simplifies Sizing of, by F. Caplan .....September 173
Electrically Heated Schools, How To Control Unit Ventilators in, by Richard M. Plettner .....November 134
Electricity for Air Conditioning — How to Estimate Operating Costs, by F. F. Stevenson .....August 131; *Nov. 90*
Electricity?, Energy for Air Conditioning — Gas or, by F. F. Stevenson .....June 109
Electricity May Not be Offset, Intangible Advantages of Purchased, (Open for Discussion), by William T. O'Reilly ..July 94
Electrode Field, Cites Two Examples to Illustrate Research in Coated, (Open for Discussion), by J. O. Cavanagh .....May 88
Electrodes for Pipe Welding, Specialization Marks Use of Coated, by H. F. Reid .....April 134; *May 88*
Electronics Plant, How Air Supply, Exhaust via Concrete Columns Serve .....November 151
Energy Systems, Consider Alternatives; Time Not Yet Ripe for Standardized, (Open for Discussion), by Maurice G. Gamze .....July 85
Engineer Shortage for Next Four to Six Years, Predicts .....January 45
Engineering, A Case of Short Cut, by C. T. Baker ....July 129
Engineering Means Better Hospital Care, Better, by J. A. Millard ....January 192; *March 102*
Engineering Session, Health Conference to Feature All-Day .....October 43
Engineers and Architects Meet To Plan for More Cooperation .....December 39
English Plant, Gas Turbine Supplies Heating, Power To .....December 41
Environmental Control, Agricultural Engineers Present Program on .....June 40
Epoxy Resins to Control Pipe Corrosion, How to Apply, by R. H. Bacon .....May 124
Equipment Maintenance, Chemistry and, by Charles M. Loucks .....November 157
Equipment Than Merely Finding Space, There's More to Locating, by Samuel R. Lewis .....August 118
Exhaust Plenums for Mist Control — How To Design for Ventilation Economy — two problems discussed at the 27th annual meeting of the Industrial Hygiene Foundation .....December 128

Exhaust System? What Are the Use Limits on a One-Fan Supply/ — (Question of the Month) .....February 64
Expansion Joints? Here Are Important Points to Remember, Installing Bellows, by Martin J. Hannah .....January 186

F

Failure of Plastic Pipe in Service, How to Prevent, by L. W. Gleekman .....March 127
Fallout Shelters, ASHRAE Forms Committee to Study ..March 50
Fan Bhp, Analysis of Fundamentals Shows How to Handle Heat Caused By, (Open for Discussion), by Melvin A. Ramsey .....December 81
Fan-Coil Units, A Survey Shows New Hotels Choose, by Lewis Smith .....June 133
Fan Selection, The Role of Static Efficiency In, by J. A. Bishop .....January 164; *April* 98
Fan Static Efficiency, Feels Too Much Emphasis Placed on, (Open for Discussion), by C. J. Trickler .....April 98
Fan Supply/Exhaust System? What Are the Use Limits On a One-, (Question of the Month) .....February 64
Federal Buildings: Resume of Planning, Design and Contruction Procedures, by Ferdinand Kaufholz, Jr. .....November 148
Field Tests, Endorses Author's Views on Value of, (Open for Discussion), by Bruno Morabito .....August 76
Field Tests, What to Expect from Air Flow, by J. A. Bishop .....July 110; August 119; *Aug. 76; Dec. 81,* 82
Fittings, Flanges Told to U. S. House, Import Problems of Steel .....February 156
Fittings Process System Saves Time, Dollars for Chemical Plant, Grooved Pipe and, by Harold Reed .....January 160
Flink, Carl, Retires — ASHRAE Guide Editor .....August 42
Flow Rate Factors for Pipe Size Changes with Liquids at Turbulent Flow Conditions, Tables Provide Pressure Drop, by John D. Constance ....June 135
Flow Valve to Halt Burner if HTHW Flow Stops, Recommends, (Open for Discussion), by Anton Krapek ....March 98
Foot or Meter? .....October 42
Fossil Fuel Efficiency, Feels 40 Percent is Too Low a Figure for, (Open for Discussion), by R. A. Parsons .....April 93
Fossil Fuels, ASME Fuel Div. to Discuss Application of ....., ...November 227
Fountain, Piping for Seattle's International, by William M. Valentine .....April 112
French Housing Project Has Mammoth Central Boiler Plant .....December 40
Fuel Costs for One Installation, Oil-Fired Infrared Heating — A Report on .....December 41
Fuel Efficiency, Feels 40 Percent is Too Low a Figure for, Fossil, (Open for Discussion), by R. A. Parsons .....April 93
Fuel Oil Can Economically Be Used for Commercial and Industrial Applications, Engineer Tells NOFI, No. 2 .....July 43
Fuel Oils, Charts Provide Quick Calculation of Densities, Heating Values of, by David P. Costa .....April 153
Fuel Oils — No. 2 Oil or No. 5 Oil — Which Offers the Greater Economy in Heating? ....October 104

G

Galvanized Pipe Corrosion Control, Sees Danger in Generalizations on, (Open for Discussion), by T. E. Larson ..June 90
Galvanized Steel Pipe, How to Prevent Corrosion of, by J. K. Rice .....May 114; *June 90, 94*
Gas for Air Conditioning — How to Estimate Operating Costs, by F. F. Stevenson ....July 135; *Sept. 108*
Gas Central System Has Burners, Cooling Coils in Same Air Stream, All ....September 146; *Oct.* 79
Gas or Electricity? Energy for Air Conditioning —, by F. F. Stevenson .....June 109
Gas Engine Drives Building's Air Conditioning Compressor, Natural .....May 113
Gas Engine Drive For Centrifugal Compressors, Natural, by John C. Conrad ..December 111
Gas-Fired Infrared Heaters Keep Train Maintenance Crews Warm, Even When Shop Doors Are Open ....October 42
Gas-Fired Infrared Heaters Provide Uniform Heat at Missile Component Plant .....May 40
Gas-Fired Infrared Heaters, Space Heating with, by F. J. Brewer and H. N. Ballantyne ....August 104; *Nov.* 90
Gas Flow, Chart Gives Required Pipe Sizes For Specified, by David P. Costa .....January 207
Gas Lines, Leaded Vinyl Silences Roaring .....March 44
Gas Peak Shaving Plant Requires Intricate Piping Systems, by D. H. Townsend .....June 116
Gas Reserves Rise Nearly 13 Percent During Last Five Years, Natural .....July 41
Gas Is Sole Energy Source for Apartment-Shopping Center Complex, Natural ....May 133; *July* 94
Gas Storage Reservoirs Total 3121 Billion Cu Ft in 1962 .....September 48
Gas Turbine Energy Package to Heat, Cool, Light Gas Utility's New Office Building, Modular .....April 119; *July* 85
Gas Turbine Supplies Heating, Power to English Plant ....December 41
Gas Utility Has Answers to Engineers' Questions on Gas, Local, (Open for Discussion), by Paul E. Chamberlin .....May 86
Gas: What Every Engineer Should Know, by Willie Hammer .....March 125; April 152; May 122; *May* 86
Generating Station, Use Austenitic Stainless Steel Piping for 2400 psi, 1100 F Steam in, by R. A. Baker .....October 93
Glass, Oil Piping System Delivers High Pressures, Temperatures for Bonding of Safety, by S. A. Littmann and Ken A. Abrahamson ....May 108
Goff, John A., ASHRAE Life Members Honor .....April 45
Government Air Conditioning, Commerce Dept. Issues Breakdown of Future .....April 228
Grooved Pipe and Fittings Process System Saves Time, Dollars for Chemical Plant, by Harold Reed .....January 160

H

HPAC Equipment? What Are Reasonable Amortization Periods for — (Question of the Month) .....March 110
HPAC Index for 1961 Available Soon .....January 46
HTHW Designer Discusses Problems Touched on in HPAC Symposium, (Open for Discussion), by W. M. Marcinkowski .....November 83
HTHW Flow Stops, Recommends Flow Valve to Halt Burner If, (Open for Discussion), by Anton Krapek ....March 98
HTHW Seminar March 10, N.Y. ASHRAE Chapter to Hold .....February 158
HTHW Systems? A Symposium by Mail — Who's Responsible for What in Design of, by B. L. Sturdevant, J. Raymond Carroll, P. M. Derrig, Stefan L. Geiringer, J. R. Kell, Anton Krapek, William T. O'Reilly, Samuel Sachs, and Perry H. Ziel .....July 103; *Nov.* 83
Harvard's Steam Supply System, Central Control Provided for .....June 124; *July* 92

Health Conference to Feature All-Day Engineering Session ..... October 43
Heat Check Program, ARF Seeks Answers to ..... May 41
Heat Gain, Says Water Offers Greatest Savings in Removing Lighting, (Open for Discussion), by Gershon Meckler ..... June 85
Heat Gain, Says Water Offers Greatest Savings in Removing Lighting, (Open for Discussion), by Samuel Sachs ..... June 88
Heat Pump Defrosting, Eliminating Unnecessary, by Lester T. Avery ..... April 133
Heat Recovery System Places Heavy Demands on Piping ..... March 115
Heat Transfer, Nomograph Simplifies Calculation of Surface Condenser, by S. J. Salva and L. Rushing ..... February 105
Heat Transfer of Surface Condensers, Nomograph Simplifies Calculation of Overall Coefficient of, by S. J. Salva and L. Rushing ..... March 151
Heated and Ventilated, How America's Schools Are, by Lewis Smith ..... September 130; October 114
Heaters, Avoid Using Recirculated Air with Direct-Fired Makeup Air, (Open for Discussion), by George M. Hama ..... October 79
Heaters, Nomograph Simplifies Sizing of Electric, by F. Caplan ..... September 173
Heating, Add Cooling to R & D Labs, Cost Studies System Analyses Show How to Modernize, by J. A. Fife ..... September 121
Heating and Air Conditioning Institute to be Held at University of Wisconsin ..... November 41
Heating and Air Conditioning in Italy, by T. H. Urdahl ..... October 112
Heating, Cooling "Growth" Matches Bank's Four Year Expansion Program, by Samuel Sachs ..... January 174
Heating, Cooling Loads, Studies Show How to Orient Building To Reduce, (Open for Discussion), by Lester S. Ries ..... December 84
Heating, Cooling Systems Protect Giant Satellite Tracking Antenna, by Roy E. Elicker ..... June 99; *Aug.* 73
Heating Experience Provides Useful Efficiency Data, Engineers', (Open for Discussion), by Pat Dwyer ..... April 98
Heating, New Post Office Served by Warm Air, by Kenneth Behr ..... May 135
Heating Plant Experience Points Up Need for Secondary Air to Insure Complete Combustion, by John M. Hartman ..... September 178
Heating Requirements, How to Estimate Net Building Space, by R. A. Parsons ..... January 155
Heating System, Church Modernizes ..... September 56
Heating Systems, Preventive Maintenance of ..... March 153
Heating Utility Begins Operation, First Cooling ..... August 39
Heating Value of Bituminous Coal Quickly Determined by Nomograph, by David P. Costa ..... October 141
Heating Values of Fuel Oils, Charts Provide Quick Calculation of Densities, by David P. Costa ..... April 153
Heating? Which Offers the Greater Economy in — No. 2 Oil or No. 5 Oil ..... October 104
Hermetic Compressor Motor Experiments Suggest Preventive Maintenance Measures, by C. A. Geist ..... June 128
High Pressure Dual Duct Systems, Honolulu Building Has Islands' First ..... March 149
High Pressure Hydraulic Lines, How To Support ..... November 40
High Pressure Tank, Case of the; Case of the Steamy Boiler Room, by C. T. Baker ..... September 165
High School Is Being Fully Air Conditioned, Why and How a New, by Lewis Smith ..... December 93
High Schools Adopt ARI Training Program ..... December 42
High Velocity, Dual Duct System, New Office Building Served by, by I. A. Naman ..... July 120
High Velocity Systems Provide Control for Heavy Loads, Dual, by J. F. Sasser and John Maras ..... May 95; *June* 85
Honolulu Building Has Islands' First High Pressure Dual Duct Systems ..... March 149
Hoods Rid Fumes, Exhaust Building in New Life Sciences Research Center, Lab, by Charles J. Allen ..... November 107
Hospital Care, Better Engineering Means Better, by J. A. Millard ..... January 192; *March 102*
Hospital Engineer's Role In Construction Projects, AHA Outlines ..... December 40
Hospital Engineers, Emphasizes, Adds to Tips to, (Open for Discussion), by Lester T. Avery ..... March 102
Hospital, Nursing School, Three Steam Boilers Supply Heating, Cooling to ..... March 47
Hotels Choose Fan-Coil Units, A Survey Shows, by Lewis Smith ..... June 133
Hot Water Coil Freeze-Ups, Avoid These Mistakes to Prevent, by Samuel R. Lewis ..... March 142
Hot Water Radiator Needs a Valve, Every, by Samuel R. Lewis ..... February 104
Hot Water System? Are Modulating Valves Necessary in Forced — (Question of the Month) ..... December 87
Hot Water System Control, How Piping Arrangement Affects, by Harold W. Alvea and R. M. Barth ..... May 99; *July* 87
Hot Water Systems, Primary-Secondary Circuitry Reduces Costs, Improves Control of, by G. F. Carlson ..... June 104
Housing Project Has Mammoth Central Boiler Plant, French ..... December 40
Humidity in Absence of Specific Data, Explains Approach to, (Open for Discussion), by P. A. Green ..... March 102
Hydraulic Lines, How to Support High Pressure ..... November 40

I

Indexing System, Explain C.E.C. Technical Literature ..... January 42
Indiana State Office Building, Here Are Cost Figures for, (Open for Discussion), by J. F. Sasser ..... June 85
Induction Systems, Sees Many Problems With Ship Air-Water, (Open for Discussion), by S. W. Brown ..... April 93
Induction Unit Systems, Do's and Don'ts for Operating Three-Pipe, by Hem C. Gupta ..... August 93; *Oct.* 84
Industrial Hygiene Foundation, 27th Annual Meeting, Considers Two Design Problems — How to Design for Ventilation Economy and Exhaust Plenums for Mist Control ..... December 128
Industrial Oven Need Not Be Hot — Outside, An, by Joseph H. Burges ..... April 144
Industrial Ventilation Now Available, Seventh Edition of ..... May 222
Infrared Heaters Keep Train Maintenance Crews Warm, Even When Shop Doors Are Open, Gas-Fired ..... October 42
Infrared Heaters Provide Uniform Heat at Missile Component Plant, Gas-Fired ..... May 40
Infrared Heaters, Space Heating with Gas-Fired, by F. J. Brewer and H. N. Ballantyne ..... August 104; *Nov.* 90

Infrared Heating, Article Prompts Pointers on, (Open for Discussion), by Anton Krapek ..... November 86

Infrared Heating — A Report on Fuel Costs for One Installation, Oil-Fired .... December 41

Infrared Heating System Provides Comfort at Indoor Tennis Court, How ... November 41

Installation? How Long Has It Been Since You've Checked the Operation of Your, by Samuel R. Lewis ..... May 132

Institute to be Held at Wisconsin University, Heating and Air Conditioning .. November 41

Instrument Installations, How to Estimate Costs Of, by Louis L. Perry ..... December 98

Insulation for Piping, Federal Construction Council Studies, Thermal ..... January 171

Insulation Reduces Cooling Load at Candy Warehouse ... April 46

Insulation Thickness, Preventing Surface Condensation — New Method Tells How To Determine ..... August 137

Integrated Lighting, Air Systems, Author Refigures Air Flow Reduction In, (Open for Discussion), by Samuel Sachs .. .. October 80

Integrated System, Queries Equipment Availability, Design Aspects of, (Open for Discussion), by David M. Solzman ..... August 81

Integrated System, Queries Equipment Availability, Design Aspects of, (Open for Discussion), by Warren Viessman ..... August 76

Ions Requires Standardization, Caution: Data on, (Open for Discussion), by Karl E. Schaefer ..... January 144

Italy, Heating and Air Conditioning in, by T. H. Urdahl ..... October 112

J

Jet Airport Design Calls for Multiplicity of Systems, New Concept in, by Ray B. Luhnow ..... December 102

K

Korst, Prof. Helmut H., Head of Mechanical Engineering, U. of I. Names ..... May 224

Kromer, Jr., Leon B., MCAA Appoints Executive Vice President ..... April 46

L

Lab Facilities Require Flexibility in, Diverse, by T. G. Swearingen ... July 132; *Dec. 84*

Lab, Metals Development Process Integrated With Air Conditioning at AEC's Ames, by R. W. Flanagan ..... July 97

Laboratory Investigation Points Up Cause of Noisy Boiler Operation, by John M. Hartman ..... May 111

Labs, Cost Studies, System Analyses Show How To Modernize Heating, Add Cooling to R & D, by J. A. Fife .... September 121

Library of Congress, Engineering Study Shows How to Provide Air Conditioning for, by Jack W. Barrett ..... October 98

Library Shows How Warm Air Can Be Applied in Large Buildings, New, by Roger Lakey ..... December 117

Library, Special Measures Required to Combat Smoke Odors in, (Open for Discussion), by Daniel C. McCoy .. .. June 96

Library, Year 'Round Air Conditioning Maintains Temperature, Humidity Levels in ....May 105; *June 96; July* 92

Life Sciences Research Center, Lab Hoods Rid Fumes, Exhaust Building in New, by Charles J. Allen ... November 107

Lighting, Air Conditioning, Installation Points Up Advantages of Integrated, by Lester S. Ries ..... September 140

Lighting and Air Conditioning Systems, An Engineering Study of Integrated, by Samuel Sachs .March 121; *June 85, 88; Oct. 80*

Lighting Heat Gain, Says Water Offers Greatest Savings in Removing, (Open for Discussion), by Gershon Meckler ..... June 85

Lighting Heat Gains, Says Water Offers Greatest Savings in Removing, (Open for Discussion), by Samuel Sachs .. June 88

Low Pressure Steam Reduces Costs In Plant Heating, Process Systems, by William R. Farrington ..... August 125

Low Pressure Steam Steel Boilers, Pointers on the Care of, by W. A. Keilbaugh and F. J. Pocock .. February 80; April 122

M

MCA Adopts Code of Ethics, Cincinnati ..... December 42

MCAA Appoints Leon B. Kromer, Jr. Executive Vice President ..... April 46

MCAA Elects Munier President; Nagel, Senior VP; Player, Treasurer ..... June 39

M.I.T. To Hold Summer Course on the Meteorological Aspects of Air Pollution ..... June 41

Maintenance of Heating Systems, Preventive ..... March 153

Maintenance Program Acceptance, Lauds Strategy in Gaining, (Open for Discussion), by Lester S. Ries .... January 144

Makeup Air Heaters Perform, How Direct-Fired, Unvented ..... July 113

Mass Fire, Technician Creates .. .. February 41

Matrix Approach to Piping System Stress Problems, Mathematical Model Aids in Understanding, by Theodore E. Bridge ..... April 125

McCarty, Walter, RACCA-National Elects President .. April 50

Mercury Capsule Assembly Proved Satisfactory, White Room Design for Project, by Arthur A. Pekkala ..... July 130

Metals Development Process Integrated With Air Conditioning at AEC's Ames Lab, by Robert W. Flanagan .... July 97

Miller Award, W.T., Donald J. Peters Wins ..... July 41

Miller, William Todd (1888-1961) ..... January 46

Missile Component Plant, Gas-Fired Infrared Heaters Provide Heat at ..... May 40

Missile Testing, Adverse Climates Created for Rocket and ..... September 175

Mist Control, Exhaust Plenums for, and How To Design for Ventilation Economy — two problems discussed at the 27th annual meeting of the Industrial Hygiene Foundation ... . December 128

Miters, New Tables Give Properties of Weld Elbows and, by Theodore E. Bridge and Donald R. McIlvain .... September 135

Mixing Stations, How to Apply Large Air, by E. Gordon Stocks, Jr. ..... May 128

Modernize Heating, Add Cooling in R & D Labs, Cost Studies, System Analyses Show How To, by J. A. Fife .. September 121

Modulating Valves Necessary in Forced Hot Water System? Are — (Question of the Month) ..... December 87

Monitoring Anticipates Air Conditioning Trouble, Component, by Hugo R. Lopez ....January 178; *March 106*

Monitoring Devices Insure Continuity of Performance, Anticipatory, (Open for Discussion), by Lester S. Ries .... March 106

Motel Air Conditioning Design Shows Comparative First Cost of Three Systems, by Farouk Huneidi ....May 118; *Sept. 105, 106*

Motel, Inventor States Case for Three-Pipe System in, (Open for Discussion), by A. I. McFarlan ..... September 105
Multi-Unit Control Need Not Be Expensive, Refined, (Open for Discussion), by C. J. Busch ..... July 92
Munier, Leon L., MCAA Elects President; Nagel, Senior VP; Player, Treasurer ..... June 39

N

NEFI Sponsors Short Course on Heavy Oil Burner Service ..... June 40
NEMA Receives Award for Room Air Conditioner Certification Program .. November 218
Nagel, Arthur R., Senior VP; Player, Treasurer, MCAA Elects Munier President ..... June 39
National District Heating Association Reports Progress, Makes Plans, by John F. Collins, Jr. ..... October 127
Natural Gas Engine Drives Building's Air Conditioning Compressor ..... May 113
Natural Gas Is Sole Energy Source for Apartment-Shopping Center Complex ..... May 133; *July 94*
Navy, Thermoelectric Air Conditioner Developed for .... June 43
Negligent Act Determines Who's Liable, Nature of, by R. A. Brown ..... October 106
1962 Economic Outlook: Optimism with Caution .. January 41
Nitrogen at Space Lab, Thin Wall Piping Transports Liquid ..... May 43
Nodular Cast Iron, Committee Interprets Piping Code Section Dealing with Use of ... April 139
No. 2 Fuel Can Economically Be Used for Commercial and Industrial Applications, Engineer Tells NOFI ..... July 43
Noise Control for Reciprocating Compressors, by Robert M. Hoover and Lloyd J. Williams ..... November 113
Noise Evaluation, A Practical Approach to Cooling Tower, by Laymon Miller and Frederick M. Long ..... June 141
Noise Problems Require Acoustic Report, Complex, (Open for Discussion), by Howard C. Hardy ..... September 110
Nomograph Determines Temperature of Air or Water Mixtures, by F. Caplan ..... November 155
Nomograph, Heating Value of Bituminous Coal Quickly Determined by, by David P. Costa ..... October 141
Nomograph Simplifies Calculation of Overall Coefficient of Heat Transfer of Surface Condensers, by S. J. Salva and L. Rushing ..... March 151
Nomograph Simplifies Calculation of Surface Condenser Heat Transfer, by S. J. Salva and L. Rushing .... February 105
Nomograph Simplifies Sizing of Electric Heaters, by F. Caplan ..... September 173
Non-Residential Warm Air Heater Product Section, ARI Establishes ..... January 43
Nuclear Cases, Piping Code Committee Interprets ..... August 128
Nursing School, Three Steam Boilers Supply Heating, Cooling to Hospital ..... March 47

O

Office Building, Modular Gas Turbine, Energy Package to Heat, Cool, Light Gas Utility's New .... April 119; *July 85*
Office Building, Multiple Systems Meet Unusual Needs of Engineers, by Raymond L. Geiger ..... November 146
Office Building Served by High Velocity, Dual Duct System, New, by I. A. Naman ... July 120
Oil Burner Research to be Reported at API June Conference ..... May 218
Oil Burner Service, NEFI Sponsors Short Course on Heavy ..... June 40
Oil Burners, Propose Standards for ..... April 231
Oil-Fired Infrared Heating — A Report on Fuel Costs for One Installation ..... December 41
Oil Piping System Delivers High Pressures, Temperatures for Bonding of Safety Glass, by S. A. Littmann and Ken H. Abrahamson ..... May 108
Operating Cost Estimating Method Validated by Engineer's Experience, (Open for Discussion), by H. George Gregerson ..... September 108
Operating Cost Figures Show Air Conditioning Earns Money for Office Building Owners ..... September 50
Operating Costs Compare for Two-, Three-, and Four-Pipe Systems? How Do, (Open for Discussion), by John N. Pratt ..... September 166
Operating Costs, Electricity for Air Conditioning — How To Estimate, by F. F. Stevenson ..... August 131; *Nov. 90*
Operating Costs, Gas for Air Conditioning — How to Estimate, by F. F. Stevenson ..... July 135; *Sept. 108*
Operating Costs? More Capacity Ranges Needed for Air Conditioning, (Open for Discussion), by A. B. Newton ..... September 108
Operating Costs of Steam Turbine Drive Centrifugal Chillers, How To Estimate, by F. F. Stevenson ... September 161
Operation of Your Installation? How Long Has It Been Since You've Checked, by Samuel R. Lewis ..... May 132
Oven Need Not Be Hot — Outside, An Industrial, by Joseph H. Burges ..... April 144

P

PVC-Lined Steel Pipe to Transport Sulfuric Acid, Use ..... April 49
Peak Shaving Plant Requires Intricate Piping Systems, Gas, by D. H. Townsend .... June 116
Piano-Technician, Engineer Becomes ..... August 42
Pipe Corrosion Control, Sees Danger in Generalizations on Galvanized, (Open for Discussion), by T. E. Larson ..... June 90
Pipe Corrosion, How to Apply Epoxy Resins to Control, by R. H. Bacon ..... May 124
Pipe Failures, How Proper Design of a System and Its Weld Joints Aids in The Prevention of, by Helmut Thielsch ..... September 152
Pipe Failures, What an Engineer Must Know About Codes, Specifications, and Inspection for the Prevention of, by Helmut Thielsch ..... August 98
Pipe Failures, The Prevention of, — Evaluation of the Properties of Materials and Their Behavior Under Service Conditions Lead to, by Helmut Thielsch ..... October 129
Pipe Failures, The Prevention of — A Discussion of Common Material Defects — Aimed at, by Helmut Thielsch ..... December 131
Pipefitter Apprentice Contest to be Held August 13-17 at Purdue, UA ..... June 42
Pipe and Fittings Process System Saves Time, Dollars for Chemical Plant, Grooved, by Harold Reed ..... January 160
Pipe, How to Prevent Corrosion of Galvanized Steel, by J. K. Rice .... May 114; *June 90, 94*
Pipe Size Changes with Liquids at Turbulent Flow Conditions, Tables Provide Pressure Drop, Flow Rate Factors for, by John D. Constance ... June 135
Pipe Size, New Analysis Makes Possible the Direct Determination of, by Richard D. Ulrich and Raymond G. Binder .... February 69

Pipe Sizes for Specified Gas Flow, Chart Gives Required, by David P. Costa . . January 207
Pipe Stresses Efficiently — A Further Simplification, Calculating, by K. Hao Hsiao . . . . . January 194
Pipe Systems? How Do Operating Costs Compare for Two-, Three-, and Four-, (Open for Discussion), by John N. Pratt . . . . . September 106
Pipe Usage, Emphasizes Positive Aspects of Black Steel, (Open for Discussion), by Eugene M. Smith . . . . . June 94
Pipe Welding, Specialization Marks Use of Coated Electrodes for, by H. F. Reid . . . . . April 134; *May* 88
Piping Arrangement Affects Hot Water System Control, How, by Harold W. Alvea and R. M. Barth . . . . . May 99; *July* 87
Piping Change on Two of Six Zones Feasible? Is — (Question of the Month) . . . . . November 95
Piping Code Committee Interprets Nuclear Cases . . . August 128
Piping Code Section Dealing with Use of Nodular Cast Iron, Committee Interprets . . . April 139
Piping Cost Estimate Work Through System Standardization, Ease, by Arthur H. Weber . . . . . November 119
Piping Cost Estimates, Computers Are Answer to Complexity of Piping Cost Estimates, by Winston M. Dudley and Maurice Dornberg . . . . . October 107
Piping, Federal Construction Studies Thermal Insulation for . . . . . January 171
Piping for Seattle's International Fountain, by William M. Valentine . . . . . April 112
Piping System Delivers High Pressures, Temperatures for Bonding of Safety Glass, Oil, by S. A. Littmann and Ken H. Abrahamson . . . . . May 108
Piping System Stress Problems, Mathematical Model Aids in Understanding Matrix Approach to, by Theodore E. Bridge . . . . . April 125
Piping Systems, Gas Peak Shaving Plant Requires Intricate, by D. H. Townsend . . . . June 116
Piping Tip, Suggests Modification to Earlier, (Open for Discussion), by A. C. Kirkwood . . . . . January 147
Piping, Unique Heat Recovery System Places Heavy Demands on . . . . . March 115
Planetarium Air Conditioning, Problems of Thin Shell Design Solved in, by Harold P. Brehm . . . . . December 107
Plant Heating, Process Systems, Low Pressure Steam Reduces Costs in, by William R. Farrington . . . . . August 125
Plant, Ventilation Air — The Lifeblood of a . . . . . April 131
Plant's Modified Air Conditioning System, (Open for Discussion), by L. F. Coombs . . May 88
Plastic Pipe Rating System, Adopts . . . . . April 230
Plastic Pipe in Service, How to Prevent Failure of, by L. W. Gleekman . . . . . March 127
Plastic Ventilation Systems, What You Should Know When Designing, by Robert A. Brown . . . . . September 179
Player, Frank A., Treasurer, MCAA Elects Munier President; Nagel, Senior VP . . June 39
Plenum Engineering — A Key To Success with Ventilating Ceilings, by Thomas Mariner . . . . . October 130
Plenums? Suspended Ceiling and Raised Floor Used as Supply and Return, (Open for Discussion), by F. J. Grande . . March 98
Polyester Piping Chosen for Corrosion Resistance to Brine, Chlorine, by R. E. Baker . . . . . November 130
Post Office Modernization, Space for Equipment is Key Problem in, by F. A. Homann . . . . . November 124
Post Office Served by Warm Air Heating, New, by Kenneth Behr . . . . . May 135
Preheat Coils Described, Air Bypass Method of Temperature Control of, (Open for Discussion), by F. F. Stevenson . . . . . March 97
Pressure Drop, Flow Rate Factors for Pipe Size Changes with Liquids at Turbulent Flow Conditions, Tables Provide, by John D. Constance . . . . . June 135
Pressurization, Feels Steam Pressurization Offers Advantages over Gas, (Open for Discussion), by Stefan L. Geiringer . . . . . May 83
Pressurization, Feels Steam Pressurization Offers Advantages Over Gas, (Open for Discussion), by Harald L. Tamm . . . . . May 83
Preventive Maintenance of Heating Systems . . . . . March 153
Preventive Maintenance Measures, Hermetic Compressor Motor Experiments Suggest, by C. A. Geist . . . . . June 128
Process Piping Systems, Liquid Recirculation Around Centrifugal Pumps In, by J. A. Hunter, Jr. . . . . July 141
Process Systems, Low Pressure Steam Reduces Costs in Plant Heating, by William R. Farrington . . . . . August 125
Production Expansion Requires Additional Cooling, Filtering Capacity . . . . March 45; *May* 88
Psychrometric Chart, ASHRAE Develops New . . . . . January 320
Pump, The Exploding, by C. T. Baker . . . . . February 96
Pump Without the Pounding? How Can We Operate This — (Question of the Month) . . . . . August 84; *Sept. 112, 118*

R

RACCA-National Elects McCarty President . . . . . April 50
Radiator Needs a Valve, Every Hot Water, by Samuel R. Lewis . . . . . February 104
Radome Air Conditioning, Compares Experience with, (Open for Discussion), by P. A. Green . . . . . August 73
Rating Methods When Selecting Air Cleaning Devices, Know . . . . . January 181; *March 106*
Reciprocating Compressors, Noise Control for, by Robert M. Hoover and Lloyd J. Williams . . . . . November 113
Recirculated Air with Direct-Fired Makeup Air Heaters, (Open for Discussion), by George M. Hama . . . October 79
Recirculation Around Centrifugal Pumps in Process Piping Systems, Liquid, by J. A. Hunter, Jr. . . . . July 141
Research Laboratory Requires Uninterrupted Environmental Control . . . . . March 49
Return Air Temperature Difference Is Small in Computer Room, Feel Supply, (Open for Discussion), by F. J. Grande . . . . . November 90
Rocket and Missile Testing, Adverse Climates Created for . . . . . September 175
Room Air Conditioners, International Meeting Held to Standardize Rating of . . . . . April 229
Room Air Distribution, What You Should Know About, by H. E. Straub . . . . . January 209
Room Air Induction Equipment, ARI to Certify . . . . . March 43

S

Satellite Tracking Antenna, Heating, Cooling Systems Protect Giant, by Roy E. Elicker . . . . . June 99; *Aug.* 73
School Air Conditioning? How Much Does It Cost To Put Quality and Year 'Round Service Into, by Maurice J. Wilson . . . . . January 202
School Is Being Fully Air Conditioned, Why and How a New High, by Lewis Smith . . . . . December 93

Schools Are Heated and Ventilated, How America's, by Lewis Smith ..... September 130; October 114
Schools, How to Control Unit Ventilators in Electrically Heated, by Richard M. Plettner ..... November 134
Seattle's International Fountain, Piping for, by William M. Valentine ..... April 112
Seattle's Space Needle, Air Conditioning Matches Solar Heat Gains in, by R. R. Kirkwood and R. C. Lux ..... April 107; *Nov. 84*
"Semi-Central" System, Enlarges on Description of, (Open for Discussion), by E. M. Johnson ..... July 91
September Construction Contracts Top 1961 Figure; Year Totals Ahead Too ..... December 39
Shelter Cooling and Ventilation, Franklin Institute to Study ..... July 102
Shelter Costs Down, Must Distinguish Between Necessities, Extras to Keep, (Open for Discussion), by R. J. Zablodil ..... May 84
Shelters, Design Requirements for Mechanical Systems in Protective, by Paul R. Achenbach ..... February 73; *May 84*
Shelters, Integrated System Provides Mechanical, Electrical Service for Survival, by David M. Solzman ..... June 119; *Aug. 76, 81*
Ship Air-Water Induction Systems, Sees Many Problems with, (Open for Discussion), by S. W. Brown ..... April 93
Ship's Ventilation System, USCG Cadet Project: Redesign, by R. J. Hinkle and D. A. Hough ..... May 138
Shopping Center Complex, Natural Gas Is Sole Energy Source for Apartment ..... May 133; *July 94*
Show Guide to 12th National Exposition of the Air-Conditioning, Heating and Refrigeration Industry ..... February 107
Show Section of Air-Conditioning, Heating and Refrigeration Industry 12th National Exposition, February Issue Will Feature ..... January 46
Sidewalks Clear, Snow Melting System Keeps Bank's, by L. A. Stevens and G. D. Winans ..... April 114
Sizing of Electric Heaters, Nomograph Simplifies, by F. Caplan ..... September 173
Smoke Odors in Library, Special Measures Required to Combat, (Open for Discussion), by Daniel C. McCoy ..... June 96
Snow Melting System Keeps Bank's Sidewalks Clear, by L. A. Stevens and G. D. Winans ..... April 114
Solar Energy Research to Members, Others, AASE Offers Aid in ..... February 160
Solar Heat Gains in Seattle's Space Needle, Air Conditioning Matches, by R. R. Kirkwood and R. C. Lux ..... April 107; *Nov. 84*
Solar Irradiation Tables, Supplementary Data for, (Open for Discussion), by M. O. Cotter and F. W. Hutchinson ..... January 148
Sound Rating Standard for HPAC Equipment, ASHRAE Publishes ..... November 220
Space Heating with Gas-Fired Infrared Heaters, by F. J. Brewer and H. N. Ballantyne ..... August 104; *Nov. 90*
Space Lab, Thin Wall Piping Transports Liquid Nitrogen ..... May 43
Space Needle, Air Conditioning Matches Solar Heat Gains in Seattle's, by R. R. Kirkwood and R. C. Lux ..... April 107; *Nov. 84*
Stainless Steel Piping for 2400 psi, 1100 F Steam in Generating Station, Use Austenitic, by R. A. Baker ..... October 93
Standards for Oil Burners, Propose ..... April 231
Static Efficiency In Fan Selection, The Role of, by J. A. Bishop ... January 164; *April 98*
Statically Charged Screens Control Airborne Dust? Can ..... September 166
Steam Boilers Supply Heating, Cooling to Hospital, Nursing School, Three ..... March 47
Steam Piping During Shutdown, How to Prevent Corrosion in, by Marcel Stein .. ..March 136
Steam Piping Under Changing Load Conditions, How to Prevent Corrosion in, by Marcel Stein ..... February 90
Steam Reduces Costs In Plant Heating, Process Systems, Low Pressure, by William R. Farrington ..... August 125
Steam Steel Boilers, Pointers on the Care of Low Pressure, by W. A. Keilbaugh and F. J. Pocock ... February 80; April 122
Steam Supply System, Central Control Provided for Harvard's ..... June 124; *July 92*
Steam Turbine Drive Centrifugal Chillers, How to Estimate Operating Costs of, by F. F. Stevenson ..... September 161
Steel Boilers By the Slice, Install ..... March 48
Steel Boilers, Pointers on the Care of Low Pressure Steam, by W. A. Keilbaugh and F. J. Pocock ... February 80; April 122
Steel Fittings, Flanges Told to U. S. House, Import Problems of ..... February 156
Steel Pipe, How To Bend and Join, by Samuel H. Nitzberg ..... September 170
Steel Pipe to Transport Sulfuric Acid, Use PVC-Lined ..... April 49
Steel Pipe Usage, Emphasizes Aspects of Black, (Open for Discussion), by Eugene M. Smith ..... June 94
Store, Year 'Round Comfort at New Variety ..... February 40
Strainers, The Case of the Plugged, by C. T. Baker ..... August 140
Sulfuric Acid, Use PVC-Lined Steel Pipe to Transport .. May 49
Summer Design Conditions Must be Reconsidered, (Open for Discussion), by Lester T. Avery ..... July 92
Surface Condensation — New Method Tells How To Determine Insulation Thickness, Preventing ..... August 137
Survival Shelters, Integrated System Provides Mechanical, Electrical Service for, by David M. Solzman .. June 119; *Aug. 76, 81*
Swimmers Enjoy Sport Inside Plastic Bubble, Winter ..... February 41
Symposium To Cover Research Animal Housing ... November 216
Symposium, HTHW Designer Discusses Problems Touched on in HPAC, (Open for Discussion), by W. M. Marcinkowski ..... November 83
Symposium by Mail, A — Who's Responsible for What in Design of HTHW Systems? by B. L. Sturdevant, J. Raymond Carroll, P. M. Derrig, Stefan L. Geiringer, J. R. Kell, Anton Krapek, William T. O'Reilly, Samuel Sachs and Perry H. Ziel ..... July 103; *Nov. 83*
Symposium, Many Topics To Be Discussed at Electric Comfort Heating ..... March 46

T

Tables Provide Pressure Drop, Flow Rate Factors for Pipe Size Changes with Liquids at Turbulent Flow Conditions, by John D. Constance .. June 135
Tax Depreciation Schedule Published, New ..... October 42
Technical Literature Indexing System, Explain C.E.C. ..... January 42
Technical Writers to Meet June 11-15 ..... February 156
Temperature of Air or Water Mixtures, Nomograph Determines, by F. Caplan ..... November 155

Temperature Control of Preheat Coils Described, Air Bypass Method of, (Open for Discussion), by F. F. Stevenson ....March 97
Tennis Court, How Infrared Heating System Provides Comfort at Indoor ....November 41
Test Code Should Have Had More Emphasis, Feels Air Filter Institute, (Open for Discussion), by R. F. Logsdon ....March 106
Testing, Adverse Climates Created for Rocket and Missile ....September 175
Testing Schedule Depends on System Since Overtesting Can Ruin Valves, (Open for Discussion), by John W. Turner ....May 86
Thermal Insulation for Piping, Federal Construction Council Studies ....January 171
Thermoelectric Air Conditioner Developed for Navy ....June 43
Thermostat Needed to Stop Cold Blast, Feels Low Limit, (Open for Discussion), by F. F. Stevenson ....March 97
Three-Pipe Induction Unit Systems, Do's and Don'ts for Operating, by Hem C. Gupta ....August 93; *Oct. 84*
Three-Pipe System in Motel, Inventor States Case for, (Open for Discussion), by A. I. McFarlan ....September 105
Three-Pipe System, Ventilation Weaknesses, Trend Toward, (Open for Discussion), by John N. Pratt ....April 105
Three-Pipe System Operation, Agrees with Recommendations for, (Open for Discussion), by A. B. Newton ....October 84
Three-Pipe Systems, Comments on Ventilating Weaknesses, Trend Toward, (Open for Discussion), by Herbert L. Laube ....April 100
Three-Way Valve Operation Has Small Effect on System Resistance, (Open for Discussion), by Harold W. Alyea and R. M. Barth ....July 91
Three-Way Valve Operation Has Small Effect on System Resistance, (Open for Discussion), by Theo. F. Rockwell ..July 87
Tools in Capitol, Can Use Powder Actuated ....September 52
Tower, The Case of the Falling, and the Growling Compressor, by C. T. Baker ....May 140
Tunnels Should Favor Reliable Performance, Location of Controls in, (Open for Discussion), by Lester Ries ....July 92

U

UA Pipefitter Apprentice Contest to be Held August 13-17 at Purdue ....June 42
Underground Reservoirs Provide Cool Water for Industrial Uses, Well Drilling and Development, How, by John F. Hoffman ....November 141
United Association Instructors and Apprentices Meet Again at Purdue ....October 40
Unit Control Matches Discharge Temperatures, Multi-, by C. J. Busch ....April 140; *May 88; July* 92
Unit Heaters? Replace or Repair ....April 48
Unit Ventilators in Electrically Heated Schools, How To Control, by Richard M. Plettner ....November 134
Unvented Makeup Air Heaters Perform, How Direct-Fired ....July 113

V

Vacuum Breaker Stops Boiler Flooding, Properly Located, by John M. Hartman ....July 119
Valve Operation Has Small Effect on System Resistance, Three-Way, (Open for Discussion), by Harold W. Alyea and R. M. Barth ....July 91
Valve Operation Has Small Effect on System Resistance, Three-Way, (Open for Discussion), by Theo. F. Rockwell ....July 87
Valves for Control, Other Applications, Selection and Use of Butterfly, by Charles Gregg ....March 143
Valves Necessary in Forced Hot Water System? Are Modulating — (Question of the Month) ....December 87
Valves, Practical Tips for Installing, by Carl A. Dopp ..May 143
Valves, Testing Schedule Depends on System Since Overtesting Can Ruin, (Open for Discussion), by John W. Turner ....May 86
Velocity at Two Points Must Be Same If Author's Statement Is To Hold, (Open for Discussion), by E. L. Sartain ....December 82
Ventilated, How America's Schools Are Heated and, by Lewis Smith ....September 130; October 114
Ventilating Ceilings, A Key to Success with —, Plenum Engineering, by Thomas Mariner ....October 130
Ventilating Weaknesses, Trend Toward Three-Pipe Systems, Comments on, (Open for Discussion), by Herbert L. Laube ....April 100
Ventilating Weaknesses, Trend Toward Three-Pipe System — (Open for Discussion), by John N. Pratt ....April 105
Ventilation Air — The Lifeblood of a Plant ....April 131
Ventilation Conference to be Held June 13-15 in Seattle, Wash. ....April 49
Ventilation Conference Scheduled for February 19-22 ....February 40
Ventilation Economy, How To Design for, and Exhaust Plenums for Mist Control — two problems discussed at the 27th annual meeting of the Industrial Hygiene Foundation ....December 128
Ventilation System, USCG Cadet Project: Redesign Eagle's, by R. J. Hinkle and D. A. Hough ....May 138
Ventilation Systems, What You Should Know When Designing Plastic, by Robert A. Brown ....September 179
Vinyl Silences Roaring Gas Lines, Leaded ....March 44

W

Warehouse, Insulation Reduces Cooling Load at Candy .April 46
Warm Air Can Be Applied in Large Buildings, New Library Shows How, by Roger Lakey ....December 111
Warm Air Heater Product Section, ARI Establishes Non-Residential ....January 43
Warm Air Heating, New Post Office Served by, by Kenneth Behr ....May 135
Water Piping Systems, Closed Circulating — Operating Problems that Arise and How to Combat Them, by Sidney Sussman and Henry L. Shuldener, Jr. ....July 115
Water Treatment, Boiler Cleaning Serves as Check on, by John M. Hartman ....August 136
Water Quality Data May Be Misinterpreted, Feels, (Open for Discussion), by Ralph M. Westcott ....June 94
Water Quality Data for New York City's Supplies, Qualifies, (Open for Discussion), by Sidney Sussman ....June 94
Weld Elbows and Miters, New Tables Give Properties of, by Theodore E. Bridge and Donald R. McIlvain .. September 135
Welding, Specialization Marks Use of Coated Electrodes for Pipe, by H. F. Reid ....April 134; *May 88*
Well Drilling and Development, How Underground Reservoirs Provide Cool Water for Industrial Uses, by John F. Hoffman ....November 141

Well Location and Design — How Underground Reservoirs Provide Cool Water for Industrial Uses, by John F. Hoffman ..... August 113; *Oct.* 82
Wells? How Can Yield Be Maintained in Areas With Many, (Open for Discussion), by Willie Hammer ..... October 82
White Room Design for Project Mercury Capsule Assembly Proved Satisfactory, by Arthur A. Pekkala ..... July 130
Willard, Arthur Cutts, University Honors ..... March 43
Winter Swimmers Enjoy Sport Inside Plastic Bubble ..... February 41

XYZ

YMCA, Use Copper Duct at ..... April 50
Year 'Round Air Conditioning Maintains, Temperature, Humidity Levels in Library ..... May 105; *June* 96; *July* 92

AUTHOR INDEX

Abrahamson, Ken H., and S. A. Littmann — Oil Piping System Delivers High Pressures, Temperatures for Bonding of Safety Glass ..... May 108
Achenbach, Paul R. — Design Requirements for Mechanical Systems in Protective Shelters ..... February 73
Allen, Charles J. — Lab Hoods Rid Fumes, Exhaust Building In New Life Sciences Research Center .... November 107
Alyea, Harold W., and R. M. Barth — How Piping Arrangement Affects Hot Water System Control ... May 99; *July* 91
Avery, Lester T. — Eliminating Unnecessary Heat Pump Defrosting ..... April 133
Avery, Lester T. — Emphasizes, Adds to Tips to Hospital Engineers, (Open for Discussion), ... March 102
Avery, Lester T. — Summer Design Conditions Must be Reconsidered, (Open for Discussion) ..... July 92
Ayres, J. Marx — Air Conditioning Needs of Computers Pose Problem for New Office Building ..... August 107; *Nov.* 90

Bache, W. Hugh — Central Cooling Updates Existing Apartment Building .. March 138
Bacon, R. H. — How to Apply Epoxy Resins to Control Pipe Corrosion ..... May 124
Baker, C. T. — Case of the Plugged Strainers .... August 140
Baker, C. T. — A Case of Short Cut Engineering ..... July 129
Baker, C. T. — Case of the Steamy Boiler Room; Case of the High Pressure Tank ..... September 165
Baker, C. T. — The Exploding Pump ..... February 96
Baker, C. T. — The Growling Compressor and the Case of the Falling Tower ..... May 140
Baker, C. T. — How Can We Operate This Pump Without the Pounding? — (Question of the Month) ..... August 84
Baker, C. T. — What Are Reasonable Amortization Periods for HPAC Equipment? — (Question of the Month) ..... March 110
Baker, R. A. — Use Austenitic Stainless Steel Piping for 2400 Psi, 1100 F Steam in Generating Station ..... October 93
Baker, R. E. — Polyester Piping Chosen for Corrosion Resistance to Brine, Chlorine ..... November 130
Ballantyne, H. N., and F. J. Brewer — Space Heating with Gas-Fired Infrared Heaters ..... August 104
Barrett, Jack W. — Engineering Study Shows How to Provide Air Conditioning for Library of Congress ..... October 98
Barth, R. M., and Harold W. Alyea — How Piping Arrangement Affects Hot Water System Control ... May 99; *July* 91
Behr, Kenneth — New Post Office Served by Warm Air Heating ..... May 135
Beres, J. C. — How Can We Operate This Pump Without the Pounding? (Question of the Month) ..... September 118
Binder, Raymond C., and Richard D. Ulrich — New Analysis Makes Possible the Direct Determination of Pipe Size ..... February 69
Biro, Joseph E. — Are Modulating Valves Necessary In Forced Hot Water Systems? — (Question of the Month) ..... December 87
Bishop, J. A. — The Role of Static Efficiency in Fan Selection ..... January 164
Bishop, J. A. — What to Expect from Air Flow Field Tests .. July 110; August 119; *Dec.* 82
Bowers, L. S. — How to Estimate Performance of Air-Cooled Condensing Units .... July 125
Brehm, Harold P. — Problems of Thin Shell Design Solved in Planetarium Air Conditioning ..... December 107
Brewer, F. J., and H. N. Ballantyne — Space Heating with Gas-Fired Infrared Heaters ..... August 104
Bridge, Theodore E. — Mathematical Model Aids in Understanding Matrix Approach to Piping System Stress Problems ..... April 125
Bridge, Theodore E., and Donald R. McIlvain — New Tables Give Properties of Weld Elbows and Miters .. September 135
Brown, R. A. — Burden of Proof May Be on Defendant in Boiler Explosion Cases ..... September 145
Brown, R. A. — Compressor Explosion Not Covered by "All-Inclusive" Machinery Policy ..... December 130
Brown, R. A. — Know the Exact Coverage of Your Boiler Insurance Policy .... November 123
Brown, R. A. — Nature of Negligent Act Determines Who's Liable ..... October 106
Brown, R. A. — What You Should Know When Designing Plastic Ventilation Systems ..... September 179
Brown, S. W. — Sees Many Problems with Ship Air-Water Induction Systems ..... April 93
Burges, Joseph H. — An Industrial Oven Need Not Be Hot — Outside ..... April 144
Busch, C. J. — Multi-Unit Control Matches Discharge Temperatures .... April 140; *July* 92

Caplan, F. — Nomograph Determines Temperature of Air or Water Mixtures ... November 155
Caplan, F. — Nomograph Simplifies Sizing of Electric Heaters ..... September 173
Carlson, G. F. — Primary-Secondary Circuitry Reduces Costs, Improves Control of Hot Water Systems .... June 104
Carroll, Raymond, P. M. Derrig, Stefan L. Geiringer, J. R. Kell, Anton Krapek, William T. O'Reilly, Samuel Sachs, Perry H. Ziel, and B. L. Sturdevant — A Symposium by Mail — Who's Responsible for What in Design of HTHW Systems? ..... July 103
Cavanagh, J. O. — Cites Two Examples to Illustrate, Research in Coated Electrode Field, (Open for Discussion) ..... May 88

Chamberlin, Paul E. — Local Gas Utility Has Answers to Engineers' Questions on Gas, (Open for Discussion) ...May 86
Collins, Jr., John F. — National District Heating Association Reports Progress, Makes Plans .....October 127
Conrad, John C. — Natural Gas Engine Drive For Centrifugal Compressors .....December 111
Constance, John D. — Chart Determines Rate of CO_2 Buildup in Airtight Enclosures .....August 141
Constance, John D. — Tables Provide Pressure Drop, Flow Rate Factors for Pipe Size Changes with Liquids at Turbulent Flow Conditions .....June 135
Coombs, L. F. — Plant's Modified Air Conditioning System, (Open for Discussion) ..May 88
Costa, David P. — Chart Gives Required Pipe Sizes For Specified Gas Flow .....January 207
Costa, David P. — Chart Permits Quick Calculation of Temperature of Air from Blast Coil .....July 123
Costa, David P. — Charts Provide Quick Calculations of Densities, Heating Values of Fuel Oils .....April 153
Costa, David P. — Heating Value of Bituminous Coal Quickly Determined by Nomograph .....October 141
Cotter, M. O., and F. W. Hutchinson — Supplementary Data for Solar Irradiation Tables (Open for Discussion) .....January 148
Csathy, Denis — Chart Rapidly Determines Theoretical Combustion Air Requirements .....December 141

Derrig, P. M., Stefan L. Geiringer, J. R. Kell, Anton Krapek, William T. O'Reilly, Samuel Sachs, Perry H. Ziel, B. L. Sturdevant, and J. Raymond Carroll — A Symposium by Mail — Who's Responsible for What In Design of HTHW Systems? .....July 103
Desmond, Gordon, and Leonard Weger — Combine Old and New Systems to Air Condition 35-Year Old Building .....February 84
Dopp, Carl A. — How Can We Operate This Pump Without the Pounding? — (Question of the Month) .....August 86
Dopp, Carl A. — Practical Tips for Installing Valves ...May 143
Dornberg, Maurice, and Winston M. Dudley — Computers Are Answer to Complexity of Piping Cost Estimates .....October 107
Dudley, Winston M., and Maurice Dornberg — Computers Are Answer to Complexity of Piping Cost Estimates .....October 107
Dwyer, Pat — Engineers' Heating Experience Provides Useful Efficiency Data, (Open for Discussion) .....April 98

Elicker, Roy E. — Heating, Cooling Systems Protect Giant Satellite Tracking Antenna .....June 99
Farrington, William R. — Low Pressure Steam Reduces Costs In Plant Heating, Process Systems .....August 125
Fife, J. A. — Cost Studies, System Analyses Show How to Modernize Heating, Add Cooling in R & D Labs .....September 121
Firsching, Richard C. — Are Modulating Valves Necessary In Forced Hot Water System? (Question of the Month) .....December 90
Flanagan, Robert W. — Metals Development Process Integrated with Air Conditioning at AEC's Ames Lab ....July 97

Gamze, Maurice G. — Consider Alternatives; Time Not Yet Ripe for Standardized Energy Systems, (Open for Discussion) .....July 85
Geiger, Raymond L. — Multiple Systems Meet Unusual Needs of Engineers' New Office Building .....November 146
Geiringer, Stefan L. — Feels Steam Pressurization Offers Advantages over Gas Pressurization, (Open for Discussion) .....May 83
Geiringer, Stefan L., J. R. Kell, Anton Krapek, William T. O'Reilly, Samuel Sachs, Perry H. Ziel, B. L. Sturdevant, J. Raymond Carroll, and P. M. Derrig — A Symposium by Mail — Who's Responsible for What in Design of HTHW Systems? .....July 103
Geist, C. A. — Hermetic Compressor Motor Experiments Suggest Preventive Maintenance Measures .....June 128
Gleekman, L. W. — How to Prevent Failure of Plastic Pipe in Service .....March 127
Grande, F. J. — Feels Supply, Return Air Temperature Difference Is Small in Computer Room, (Open for Discussion) .....November 90
Grande, F. J. — Is Piping Change on Two of Six Zones Feasible? — (Question of the Month) .....November 98
Grande, F. J. — Suspended Ceiling and Raised Floor Used as Supply and Return Plenums? (Open for Discussion) ..March 98
Green, P. A. — Compares Experience with Radome Air Conditioning, (Open for Discussion) .....August 73
Green, P. A. — Explains Approach to Humidity in Absence of Specific Data, (Open for Discussion) .....March 102
Gregerson, H. George — Operating Cost Estimating Method Validated by Engineer's Experience, (Open for Discussion) .....September 108
Gregerson, H. George — Why Not Use Actual Bhp for Cooling Tower Power Usages? — (Open for Discussion) .....November 90
Gregg, Charles — Selection and Use of Butterfly Valves for Control, Other Applications .....March 143
Gupta, Hem C. — Asks for Clarification on Use of Chiller-Heater, (Open for Discussion) .....September 106
Gupta, Hem C. — Do's and Don'ts for Operating Three-Pipe Induction Unit Systems .....August 93

Haines, Roger W. — Were Control Adjustments Required When System was Placed in Service? (Open for Discussion) .....November 84
Hama, George M. — Avoid Using Recirculated Air With Direct-Fired Makeup Air Heaters, (Open for Discussion) .....October 79
Hama, George M. — What Are the Use Limits On a One-Fan Supply-Exhaust System? — (Question of the Month) .....February 64
Hammer, Willie — Coal: What Every Engineer Should Know .....January 201
Hammer, Willie — Gas: What Every Engineer Should Know ..March 125; April 152; May 122
Hammer, Willie — How Can Yield Be Maintained in Areas With Many Wells?, (Open for Discussion) .....October 82
Hannah, Martin J. — Installing Bellows Expansion Joints? Here Are Important Points to Remember .....January 186
Hardy, Howard C. — Complex Noise Problems Require Acoustic Expert, (Open for Discussion) .....September 110
Hartman, John M. — Boiler Cleaning Serves as Check on

Water Treatment ....August 136
Hartman, John M. — A Boiler Must Have Clean Water ....June 115
Hartman, John M. — Heating Plant Experience Points Up Need for Secondary Air to Insure Complete Combustion .....September 178
Hartman, John M. — Laboratory Investigation Points Up Cause of Noisy Boiler Operation .....May 111
Hartman, John M. — Properly Located Vacuum Breaker Stops Boiler Flooding ..July 119
Hartman, John M. — Reduced Firing Rate of Boiler Decreases Pressure Drop, Eliminates Priming ....December 106
Hasselriis, Floyd — Is Piping Change on Two of Six Zones Feasible? — (Question of the Month) .....November 98
Hinkle, R. J., and D. A. Hough — USCG Cadet Project: Redesign Eagle's Ventilation System .....May 138
Hoffman, John F. — Well Drilling and Development — How Underground Reservoirs Provide Cool Water for Industrial Uses .....November 141
Hoffman, John F. — Well Location and Design — How Underground Reservoirs Provide Cool Water for Industrial Uses .....August 113; *Oct.* 82
Homann, F. A. — Space for Equipment Is Key Problem In Post Office Modernization .. ..November 124
Hoover, Robert M., and Lloyd J. Williams — Noise Control for Reciprocating Compressors .....November 113
Hough, D. A., and R. J. Hinkle — USCG Cadet Project: Redesign Eagle's Ventilation System .....May 138
Hsiao, K. Hao — Calculating Pipe Stresses Efficiently — A Further Simplification ....January 194
Huebner, William O. — Will Articles Inspire Air Conditioning Designers to Answer Laymen-Critics? (Open for Discussion) .....January 143
Huffman, Kenneth W. — An Oasis — Through Air Conditioning .....September 159
Huneidi, Farouk — Are Modulating Valves Necessary In Forced Hot Water System? — (Question of the Month) .....December 87
Huneidi, Farouk — Motel Air Conditioning Design Shows Comparative First Cost of Three Systems ....May 118; *Sept. 106*
Hunter, Jr., J. A. — Liquid Recirculation Around Centrifugal Pumps in Process Piping System .....July 141
Hutchinson, F. W., and M. O. Cotter — Supplementary Data for Solar Irradiation Tables, (Open for Discussion) .....January 148

Janisse, N. J. — Control is Effective — But Is Added Cost Justified? (Open for Discussion) .....May 88
Johnson, E. M. — Enlarges on Description of "Semi-Central" System, (Open for Discussion) .....July 91

Kaufholz, Jr., Ferdinand — Federal Buildings: Resume of Planning, Design and Construction Procedures ....November 148
Keating, T. F. — How Can We Operate This Pump Without the Pounding? — (Question of the Month) .....August 86
Keilbaugh, W. A., and F. J. Pocock — Pointers on The Care of Low Pressure Steam Steel Boilers ..February 80; April 122
Kell, J. R., Anton Krapek, William T. O'Reilly, Samuel Sachs, Perry H. Ziel, B. L. Sturdevant, J. Raymond Carroll, P. M. Derrig, and Stefan L. Geiringer — A Symposium by Mail — Who's Responsible for What in Design of HTHW Systems? .....July 103
Kirkwood, A. C. — Suggests Modification to Earlier Piping Tip, (Open for Discussion) .....January 147
Kirkwood, R. R., and R. C. Lux — Air Conditioning Matches Solar Heat Gains in Seattle's Space Needle .....April 107
Kirkwood, R. R. — Air Conditioning Matches Solar Heat Gains in Seattle's Space Needle, (Open for Discussion) .....November 84
Krapek, Anton — Article Prompts Pointers on Infrared Heating — (Open for Discussion) ....November 86
Krapek, Anton — Recommends Flow Valve To Halt Burner if HTHW Flow Stops, (Open for Discussion) .....March 98
Krapek, Anton, William T. O'Reilly, Samuel Sachs, Perry H. Ziel, B. L. Sturdevant, J. Raymond Carroll, P. M. Derrig, Stefan L. Geiringer, and J. R. Kell — A Symposium by Mail — Who's Responsible for What in Design of HTHW Systems? .....July 103

Lakey, Roger — New Library Shows How Warm Air Can Be Applied in Large Buildings .....December 117
Larson, T. E. — Sees Danger in Generalizations on Galvanized Pipe Corrosion Control, (Open for Discussion) .....June 90
Laube, Herbert L. — Comments on Ventilating Weaknesses, Trend Toward Three-Pipe System, (Open for Discussion) .....April 100
Lewis, Samuel R. — Avoid These Mistakes to Prevent Hot Water Coil Freeze-Ups ..March 142
Lewis, Samuel R. — Every Hot Water Radiator Needs a Valve .....February 104
Lewis, Samuel R. — How Long Has It Been Since You've Checked the Operation of Your Installation? .....May 132
Lewis, Samuel R. — Money Is Seldom Available for Dormitory Air Conditioning ....November 154
Lewis, Samuel R. — There's More To Locating Equipment Than Merely Finding Space .....August 118
Littmann, S. A., and Ken H. Abrahamson — Oil Piping System Delivers High Pressures, Temperatures for Bonding of Safety Glass .....May 108
Logsdon, R. F. — Feels Air Filter Institute Test Code Should Have Had More Emphasis, (Open for Discussion) ....March 106
Long, Frederick M., and Laymon Miller — A Practical Approach to Cooling Tower Noise Evaluation .....June 141
Lopez, Hugo R. — Component Monitoring Anticipates Air Conditioning Trouble ....January 178
Loucks, Charles M. — Chemistry and Equipment Maintenance — HPAC Engineering Data File .....November 157
Luhnow, Jr., Ray B. — New Concept in Jet Airport Design Calls for Multiplicity of Systems .....December 102
Lux, R. C., and R. R. Kirkwood — Air Conditioning Matches Solar Heat Gains in Seattle's Space Needle .....April 107

Maras, John, and J. F. Sasser — Dual Duct High Velocity Systems Provide Control for Heavy Loads .....May 95
Marcinkowski, W. M. — HTHW Designer Discusses Problems Touched on in HPAC Symposium, (Open for Discussion) .....November 83
Mariner, Thomas — Plenum Engineering — A Key to Success with Ventilating Ceilings .. ..October 130

Markert, John W. — Dual Duct Systems — Some Design Considerations .....February 97
McCoy, Daniel C. — Special Measures Required to Combat Smoke Odors in Library, (Open for Discussion) ..June 96
McFarlan, A. I. — Inventor States Case for Three-Pipe System in Motel, (Open for Discussion) .....September 105
McIlvain, Donald R., and Theodore E. Bridge — New Tables Give Properties of Weld Elbows and Miters ..September 135
Meckler, Gershon — Says Water Offers Greatest Savings in Removing Lighting Heat Gain, (Open for Discussion) ..June 85
Millard, J. A. — Better Engineering Means Better Hospital Care .....January 192
Miller, Laymon, and Frederick M. Long — A Practical Approach to Cooling Tower Noise Evaluation .....June 141
Moffat, Ormond G. — Is Piping Change on Two of Six Zones Feasible? — (Question of the Month) ....November 98
Mooney, D. A. — How Can We Operate This Pump Without the Pounding? (Question of the Month) .....September 112
Morabito, Bruno — Endorses Author's Views on Value of Field Tests, (Open for Discussion) .....August 76

Naman, I. A. — New Office Building Served by High Velocity, Dual Duct System .....July 120
Newton, A. B. — Agrees with Recommendations for Three-Pipe System Operation, (Open for Discussion).. ...October 84
Newton, A. B. — More Capacity Ranges Needed for Air Conditioning Operating Costs? (Open for Discussion) .....September 108
Nitzberg, Samuel H. — How To Bend and Join Steel Pipe .....September 170
Norcross, Ivan F. — Notes Changes in Computer Cooling Occasioned by Transistors, (Open for Discussion) .....January 144

O'Reilly, William T. — Intangible Advantages of Purchased Electricity May Not be Offset, (Open for Discussion) ..July 94
O'Reilly, William T., Samuel Sachs, Perry H. Ziel, B. L. Sturdevant, J. Raymond Carroll, P. M. Derrig, Stefan L. Geiringer, and J. R. Kell — A Symposium by Mail — Who's Responsible for What in Design of HTHW Systems? .....July 103

Parsons, R. A. — Feels 40 Percent is Too Low a Figure for Fossil Fuel Efficiency ..April 93
Parsons, R. A. — How To Estimate Net Building Space Heating Requirements ...January 155
Pekkala, Arthur A. — White Room Design for Project Mercury Capsule Assembly Proved Satisfactory ....July 130
Perry, Sr., Louis L. — How To Estimate Costs of Instrument Installations .....December 98
Petrie, E. C. — How Can We Operate This Pump Without the Pounding? — (Question of the Month) .....August 86
Plettner, Richard M. — How to Control Unit Ventilators in Electrically Heated Schools .....November 134
Pocock, F. J., and W. A. Keilbaugh — Pointers on The Care of Low Pressure Steam Steel Boilers ..February 80; April 122
Pratt, John N. — Author's reply (Open for Discussion), on Ventilating Weaknesses, Trend Toward Three-Pipe Systems .....April 105
Pratt, John N. — How Do Operating Costs Compare for Two-, Three-, and Four-Pipe Systems? (Open for Discussion) .....September 106

Ramsey, Melvin A. — Analysis of Fundamentals Show How To Handle Heat Caused by Fan Bhp, (Open for Discussion) .....December 81
Reed, Harold — Grooved Pipe and Fittings Process System Saves Time, Dollars for Chemical Plant .....January 160
Reid, H. F. — Specialization Marks Use of Coated Electrodes for Pipe Welding .....April 134
Rice, J. K. — How To Prevent Corrosion of Galvanized Steel pipe .....May 114; *June 94*
Ries, Lester S. — Anticipatory Monitoring Devices Insure Continuity of Performance, (Open for Discussion) ..March 106
Ries, Lester S. — Installation Points Up Advantages of Integrated Lighting, Air Conditioning .....September 140
Ries, Lester S. — Lauds Strategy in Gaining Maintenance Program Acceptance (Open for Discussion) ....January 144
Ries, Lester S. — Location of Controls in Tunnels Should Favor Reliable Performance, (Open for Discussion) ..July 92
Ries, Lester S. — Studies Show How to Orient Building To Reduce Heating, Cooling Loads, (Open for Discussion) .....December 84
Rockwell, Theo. F. — Three-Way Valve Operation Has Small Effect on System Resistance, (Open for Discussion) .....July 87
Rushing, L., and S. J. Salva — Nomograph Simplifies Calculation of Overall Coefficient of Heat Transfer of Surface Condensers .....March 151
Rushing, L., and S. J. Salva — Nomograph Simplifies Calculation of Surface Condenser Heat Transfer .....February 105

Sachs, Samuel — An Engineering Study of Integrated Lighting and Air Conditioning Systems .....March 121; *June 88; Oct. 80*
Sachs, Samuel — Heating, Cooling "Growth" Matches Bank's Four Year Expansion Program .....January 174
Sachs, Samuel, Perry H. Ziel, B. L. Sturdevant, J. Raymond Carroll, P. M. Derrig, Stefan L. Geiringer, J. R. Kell, and Anton Krapek — A Symposium by Mail — Who's Responsible for What in Design of HTHW Systems? .....July 103
Salva, S. J., and L. Rushing — Nomograph Simplifies Calculation of Overall Coefficient of Heat Transfer of Surface Condensers .....March 151
Salva, S. J., and L. Rushing — Nomograph Simplifies Calculation of Surface Condenser Heat Transfer .....February 105
Sartain, E. L. — Velocity at Two Points Must Be Same if Author's Statement is to Hold, (Open for Discussion) .....December 82
Sasser, James F., and John Maras — Dual Duct High Velocity Systems Provide Control for Heavy Loads ..May 95
Sasser, James F. — Here Are Cost Figures for Indiana State Office Building, (Open for Discussion) .....June 85
Schaefer, Karl E. — Caution: Data on Ions Requires Standardization, (Open for Discussion) .....January 144
Scharres, John W. — A Consulting Engineer's Views on Approval Drawings .....May 112
Shuldener, Jr., Henry L., and Sidney Sussman — Closed Circulating Water Piping Systems — Operating Problems that Arise and How to Combat Them .....July 115

Smith, Eugene M. — Emphasizes Aspects of Black Steel Pipe Usage, (Open for Discussion) ..... June 94
Smith, Lewis — How America's Schools Are Heated and Ventilated ..... September 130; October 114
Smith, Lewis — Self-Contained Units Chosen to Air Condition 30-Year-Old Building... ..... April 128
Smith, Lewis — A Survey Shows New Hotels Choose Fan-Coil Units ..... June 133
Smith, Lewis — Why and How a New High School Is Being Fully Air Conditioned ..... December 93
Solzman, David M. — Integrated System Provides Mechanical, Electrical Service for Survival Shelters .... June 119; *Aug. 81*
Stein, Marcel — How to Prevent Corrosion in Steam Piping During Shutdown .. March 136
Stein, Marcel — How to Prevent Corrosion in Steam Piping Under Changing Load Conditions ..... February 90
Stevens, L. A., and G. D. Winans — Snow Melting System Keeps Bank's Sidewalks Clear ..... April 114
Stevenson, F. F. — Air Bypass Method of Temperature Control of Preheat Coils Described, (Open for Discussion) ..... March 97
Stevenson, F. F. — Electricity for Air Conditioning — How To Estimate Operating Costs ..... August 131; *Nov. 90*
Stevenson, F. F. — Energy for Air Conditioning — Gas or Electricity? ..... June 109
Stevenson, F. F. — Feels Low Limit Thermostat Needed to Stop Cold Blast, (Open for Discussion) ..... March 97
Stevenson, F. F. — Gas for Air Conditioning — How to Estimate Operating Costs, ... July 135; *Sept. 108*
Stevenson, F. F. — How To Combine Centrifugal and Absorption Units For Low Operation Costs .... December 123
Stevenson, F. F. — How To Estimate Operating Costs of Steam Turbine Drive Centrifugal Chillers ..... September 161
Stocks, Jr., E. Gordon — How to Apply Large Air Mixing Stations ..... May 128
Stocks, Jr., E. Gordon — How to Install and Control Large Air Mixing Stations .... June 137
Straub, H. E. — What You Should Know About Room Air Distribution ..... January 209
Sturdevant, B. L., J. Raymond Carroll, P. M. Derrig, Stefan L. Geiringer, J. R. Kell, Anton Krapek, William T. O'Reilly, Samuel Sachs, and Perry H. Ziel — A Symposium by Mail — Who's Responsible for What In Design of HTHW Systems? ..... July 103
Sussman, Sidney, and Henry L. Shuldener, Jr. — Close Circulating Water Piping Systems Operating Problems that Arise and How to Combat Them .. .. July 115
Sussman, Sidney — Qualifies Water Quality Data for New York City's Supplies, (Open for Discussion) ..... June 94
Swearingen, T. G. — Diverse Lab Facilities Require Flexibility in Air Conditioning .. .. July 132

Tamm, Harold L. — Feels Steam Pressurization Offers Advantages over Gas Pressurization, (Open for Discussion) .. May 83
Thielsch, Helmut — A Discussion of Common Material Defects — Aimed at The Prevention of Pipe Failures ..... December 131
Thielsch, Helmut — How Proper Design of a System and Its Weld Joints Aid in The Prevention of Pipe Failures ..... September 152
Thielsch, Helmut — Evaluation of the Properties of Materials and Their Behavior Under Service Conditions Lead to — The Prevention of Pipe Failures ..... October 120
Thielsch, Helmut — What an Engineer Must Know About Codes, Specifications, and Inspection for the Prevention of Pipe Failures ..... August 98
Townsend, D. H. — Gas Peak Shaving Plant Requires Intricate Piping Systems .. June 116
Trickler, C. J. — Feels Too Much Emphasis Placed on Fan Static Efficiency, (Open for Discussion) ..... April 98
Turner, John W. — Testing Schedule Depends on System Since Overtesting Can Ruin Valves, (Open for Discussion) ..... May 86

Ulrich, Richard D., and Raymond C. Binder — New Analysis Makes Possible the Direct Determination of Pipe Size ..... February 69
Urdahl, T. H. — Heating and Air Conditioning in Italy ..... October 112

Valentine, William M. — Piping for Seattle's International Fountain ..... April 112
Viessman, Warren — Queries Equipment Availability, Design Aspects of Integrated System, (Open for Discussion) ..... August 76

Wayne, H. B. — How Can We Operate This Pump Without the Pounding? (Question of the Month) ..... September 112
Wayne, H. B. — Is Piping Change on Two of Six Zones Feasible? — (Question of the Month) ..... November 98
Wayne, H. B. — What Are The Use Limits on a One-Fan Supply/Exhaust System? — (Question of the Month) ... . February 66
Weber, Arthur H. — Ease Piping Cost Estimate Work Through System Standardizations ..... November 119
Weger, Leonard, and Gordon Desmond — Combine Old and New Systems to Air Condition 35-Year Old Building.. ..... February 84
Wells, H. A. — Heating, Cooling Systems Protect Giant Satellite Tracking Antenna, (Open for Discussion) .. August 73
Westcott, Ralph M. — Feels Water Quality Data May be Misinterpreted, (Open for Discussion) ..... June 94
Williams, Lloyd J., and Robert M. Hoover — Noise Control for Reciprocating Compressors ..... November 113
Wilson, Maurice J. — How Much Does it Cost To Put Quality and Year 'Round Service Into School Air Conditioning? ..... January 202
Winans, G. D., and L. A. Stevens — Snow Melting System Keeps Bank's Sidewalks Clear ..... April 114

Yopp, Harry T. — Use of Several Types of Efficiencies Adds Confusion to Heat Cost Analysis, (Open for Discussion) ..... April 94

Zablodil, R. J. — Must Distinguish Between Necessities, Extras to Keep Shelter Costs Down, (Open for Discussion) ..... May 84
Ziel, Perry H., B. L. Sturdevant, J. Raymond Carroll, P. M. Derrig, Stefan L. Geiringer, J. R. Kell, Anton Krapek, William T. O'Reilly and Samuel Sachs — A Symposium by Mail — Who's Responsible for What in Design of HTHW Systems? ..... July 103